REMARKS

Reconsideration of the above-identified application, as amended, is respectfully requested.

In the Office Action, the Examiner first rejected Claims 1-3 under 35 U.S.C. §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the Office Action of September 16, 2005, the Examiner rejected Claims 1-3, 14-17 and 24 under 35 U.S.C. §103(a), as being allegedly unpatentable over Friend et al. (U.S. Patent No. 6,909,159) (hereinafter "Friend") in view of Brady et al. (U.S. Patent No. 6,665,161) (hereinafter "Brady"). The Examiner is respectfully thanked for indicating that Claims 4-13 and 17-23 presented allowable subject matter.

With respect to the rejection of Claims 1 and 14 as being allegedly unpatentable over Friend in view of Brady, applicants respectfully disagree.

The present invention, as claimed in Claims 1 and 14, is directed to respective detector circuit and charged particle (e.g., alpha particle or cosmic ray) detecting method in a semiconductor device. The semiconductor device includes a detector circuit connected to a silicon substrate that provides a detectable digital signal when the silicon substrate receives a charged particle strike. A clock signal for clocking and operating the semiconductor circuits fabricated in the silicon substrate serves to specify periods of active and inactive operation of the semiconductor circuits, and the detector is active only when the clock signal is inactive to eliminate false triggering from normal device substrate current flowing during normal switching operations of the semiconductor circuits.

Thus, as a preliminary matter, applicants amend each of Claims 1 and 14 to clarify that in the circuit and method of the invention, the detector circuit is activated by a

timing signal only when the semiconductor circuits are non-active to eliminate false triggering from substrate currents flowing during normal switching operations of the semiconductor circuits. This amendment, it is submitted, is responsive to and corrects the alleged indefiniteness problem under 35 U.S.C. §112 without adding any new matter. Thus, the Examiner is respectfully requested to withdraw the rejection of Claims 1-3 under 35 U.S.C. §112.

In view of the correction to Claims 14 and 21, the charged particle detector is only operable when the circuit being monitored is in an inactive state.

Respectfully, Friend and Brady, whether taken alone or in combination, do not teach the present invention. Essentially, applicants submit that these prior art references do not teach activating particle/ray detection circuitry during inactive period of a clock cycle. Both Friend and Brady references rather show and describe systems that disable circuits upon detection of a cosmic ray/ alpha particle strike, i.e., they respond to the Soft Error Rate (SER) event by disabling circuitry. Thus, see Friend at col. 5, lines 20-25, 26-31, and 43-49 for example. Brady, likewise, teaches responding to detection of ionizing radiation by coupling an output signal to a circuit "disabler" that is either activated, or not, as a function of the value of the ouptut signal. When activated, such a disabler causes the IC to stop functioning and can be implemented in a variety of ways. One way in particular relates to disabling a clock driver circuit as described in connection with Fig. 4.

Respectfully, neither Friend nor Brady teach or suggest when the detector circuit is activated as in the present invention. In the present invention, the detector circuit is activated (active) by a timing signal only when the semiconductor circuits are non-active to eliminate false triggering from substrate currents flowing during normal switching operations

of the semiconductor circuits. This may for instance, be when a clock signal driving circuitry is inactive (e.g., at a clock low) (see paragraph [0010] and [0014] of the present specification.

Respectfully, in the present invention, the timing signal and circuits (Feeder devices 8, 9 and 10 cooperatively interact to turn off active devices in the well and cause their respective voltages to float (see specification ¶[0019] and ¶ [0022]), i.e., the semiconductor circuits being monitored are non-active. It is at this time, in response to a timing signal, that the detector circuit is activated as set forth in amended Claims 1 and 14.

Friend does not teach this. Friend, in fact shows a radiation detector that is always activated (See Figure 5) and it does not receive any activation signal as it operates as a stand alone circuit (see circuit 31 in Figure 5) that does not receive any activation signal. Respectfully, Brady is of no help in this regard. Like Friend, Brady does not teach any signal input to activate the radiation sensing means (See Figure 1 of Brady). Moreover, the passage in Brady relied upon by the Examiner to make up the deficiency of Friend is misplaced. This passage (Col. 6, lines 7-31 in Brady) details the response to detection of an SER event by the monitoring circuit -which response includes deactivating a clock signal to disable the IC. This passage and the other teaches of Brady are respectfully not suggestive of activating the detection circuit (e.g., by a clock signal or like timing signal) as set forth in Claims 1 and 14 of the present invention.

Thus, respectfully amended Claims 1 and 14 are patentable over the combination of Friend and Brady. Consequently, the Examiner is respectfully requested to withdraw the rejection of at least Claims 1 and 14 under 35 U.S.C. §103(a) and withdraw the rejection of all claims dependent therefrom.

With respect to the rejection of Claim 24, applicants respectfully disagree. The subject matter of Claim 24 is directed to the second embodiment of the invention where an

area of an existing integrated circuit is monitored for SER event. Claim 24 is distinguishable over the combination of Friend and Brady in that special detector circuitry does not have to be added to "capture" the SER event. In Claim 24, an area of an existing IC is monitored and a determination is made as to whether a SER hit has occurred based on voltage levels monitored. Without having to have to add special circuitry to "capture" the SER event. This is contrary to Friend and Brady who requires a special circuit for "capturing" the SER event where as the present invention set forth in Claim 24 monitors some existing circuitry to see if it gets hit. Thus, the Examiner is respectfully requested to withdraw the rejection of independent Claim 24 under 35 U.S.C. §103(a).

In view of the foregoing remarks herein, it is respectfully submitted that this application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance be issued. If the Examiner believes that a telephone conference with the Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned, Applicants' attorney, at the following telephone number: (516) 742-4343.

Respectfully submitted,

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